

# Veterinary Entomology

## Special Interest Articles:

- Horn Flies - Always
- AgriLabs VetGun
- Follow the Label - It's the Law
- First Case of Vesicular Stomatitis



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## Insect Updates

### Reducing Horn Fly Populations on Pastured Cattle

Even with the 'Dog Days of Summer' upon us, horn flies are still present.

Horn flies are the most significant pest of beef cattle and other pastured cattle, costing the industry an average of \$1 billion annually in losses.

Both male and female horn flies are blood feeders that will take 20-30 meals / per day (bites to animal).

Depending on the infestation level, this can calculate to thousands of bites each day!

Horn flies spend the majority of their time on the animal and the females only leave periodically to deposit eggs into very fresh manure.

Luckily there are a number of products that can be used to control for horn flies. Some of the most typically and

commonly used are feed additives, insecticide impregnated ear tags, dust bags and back rubbers/oilers.

If cattle are experiencing high numbers this late into the summer the use of feed additives and ear tags might not be the best option. But setting up oilers or dusters would help, as well as treating cattle with pour ons for external fly control, sprays or the VetGun.

### AgriLabs VetGun Customer Satisfaction Survey

After launching in 2014, AgriLabs surveyed 500 customers via an online questionnaire. The responders ranged from having 11 to 200 head of cattle.

Overall, customers are very pleased with the VetGun, reporting at least 94% like the

system and 95% said they would recommend it to a friend or colleague.

99% found the VetGun convenient to use, allowing for use of treatment on hot days in remote pastures.

VetGun is a product Texas A&M AgriLife Extension tested last year and again this year in horn

fly demonstrations. Producers and Extension agents have been pleased with the results.

If you are interested in demonstration work contact me at [siswiger@ag.tamu.edu](mailto:siswiger@ag.tamu.edu)

If you want more information on the VetGun visit <http://agrilabs.com/vetgun/>

### Fly Control Around Cattle Feeding Facilities

Concentrated animal feeding areas are impacted by flies; these flies are usually breeding near edges.  
- Fence lines where manure is mixed with wet soil and accumulates.  
- Edges of potholes, in pen

corners and around gates.  
- Along pen drainage channels or edges of holding ponds.  
- In corners of feed bunks where stale feed accumulates.  
- Edges of stored manure and silage.  
- Edges around hay storage and damp areas under bales.

- Flies cannot develop in dry materials. Use clean gravel and other fill to eliminate low spots.
- Proper tilling can reduce wet barnyards.
- Uneaten hay where animals are fed in the fields provides fly breeding areas.

## Pesticides

### Carefully Follow Label Directions

Reading and understanding product labeling is vital for taking care of cattle and preventing drug-residue violations. Extra-label drug use without veterinarian direction is prohibited.

Some notable issues:

- Non-lactating dairy cattle are dairy heifers & calves under 20 months of age & dairy bulls, not dry dairy cows.
- Lactating dairy cattle are dairy breed animals over 20 months including spring heifers and dry cows.

- Use products only for indicated diseases.
- Use proper dosage of a product.
- Administer products for appropriate duration of therapy.



Some vaccine labels allow a choice between intramuscular and subcutaneous injection, always use subcutaneous when permitted.

## Cattle Care

### Proper Injection Sites at Calf-Working

Correct administration of any injection is a critical control point in beef production and animal health.

There is a negative relationship between meat tenderness and injection sites, including injection sites that have no visible lesion.

Intramuscular injections may

create permanent damage regardless of animal age including tenderness reduction in a 3" area surrounding the site.

Moving the injection site to the neck stops damage to expensive steak cuts.

Give injections according to label instructions. Keep accurate

treatment records that include:

- individual animal,
  - date treated,
  - product administered and lot/serial number,
  - dosage use,
  - route and location administered,
  - earliest date animal will have cleared withdrawal period and
  - name of person administering.
- Keep up to 3 yrs.

## Preventing Salmonella in Dairy Cows

Requires focusing on environmental factors, feed and water trough management, sources of potential spread and fresh cow management to reduce factors that predispose fresh cows to developing diarrhea.

## Beef Cattle need some Shade

Heat stress has been shown to negatively affect an animal's performance. Here in Texas, cattle are exposed to high temperatures, humidity and direct sunlight.

Grazing cattle cannot escape the heat completely but they will use natural shade to escape

radiant heat of the sun or immerse themselves in tanks, ponds or any other water sources.

Grazing cattle typically have access to trees and will get some relief there but cattle in more intensively managed systems benefit from the addition of shade

by use of cloths.

Research shows that shade clothes that provide 80% sun blockage increase lying time. But 35% block provides relief from the sun. Shade clothes can be beneficial in grazing herds by providing more covered feeding zones.

## TAHC - Protect Animals before Disaster Strikes

Make a Disaster kit for your livestock/pet, include:

- Waterproof container to store feed and equipment
- One week supply of feed

- One week supply of water
- Copies of veterinary records, breed registry and paperwork proving ownership
- Emergency contact list

- First aid kit
- Detailed diet and medication instructions
- Maps of local area with possible evacuation routes

## Human & Animal Disease & Health

### New TB test for Bovine in the Works

AG Research New Zealand has developed a new bovine TB skin test that has fewer false positives with a new biobead technology than the current

tuberculin test.

This cost-effective and reliable skin test is still undergoing research evaluation but has drawn attention from the USDA and

the UK Dept. of Environment, Food and Rural Affairs for testing of the reagent.

### TAHC Passes Rules – June 2015; Plus Fever Tick Update

#### Ch. 51, Entry Requirements, Equine Health Certificates

The new rule changes the validity of a Certificate of Veterinary Inspection (health certificate) for equine entering the state from 45 to 30 days. Rule will coincide with existing USDA interstate rules.

#### Ch. 55. Feral Swine, Holding Facility Requirements

Changes fencing requirements for feral swine holding facilities from double fencing to one good fence that prevents ingress/egress.

#### Ch. 47, Authorized Personnel, Chronic Wasting Disease (CWD)

These rules codify the standards for non-

veterinarians participating in the TAHC cervid CWD status program that want to collect samples for the required surveillance.

#### Proposed Rules

##### Ch. 38, Trichomoniasis, Testing Exposed/Infected Breeding Bulls

First rule will lower instate change of ownership virgin age from 24 to 18 months. Texas bulls up to 30 months of age may still be sold as virgins with vet signed virgin certificate.

##### Ch. 41, Fever Ticks, ID requirements in Quarantined Areas

This will require commission approved ID be applied on cattle in all fever tick zones,

not just the permanent quarantine zone along the TX-Mexico border in S. TX.

#### Ch. 51, Entry Requirements, Vesicular Stomatitis (VS) & Trichomoniasis

This rule will change the validity of health certificates on animals entering from states currently affected with VS from 30 to 14 days. A separate entry rule related to Trich will change the max age for "virgin" entry from 12 to 18 months. "Virgin" status bulls not required to have Trich test.

TAHC releases remaining portion of temporary Fever Tick Quarantine Area in Starr County, released area in SW part of Starr Co along Hwy 83, near Zapata

## *Staph aureus*: Higher Prevalence among Swine Farmers

*Staphylococcus aureus* is a contagious type of bacteria that can spread amongst animals and people. To make it worse, it is very difficult to get rid of these bacteria with antibiotic treatment.

To protect cattle from *Staph aureus*, basic principles of milking hygiene needs to be emphasized. Clean gloves need to be worn, clean or change gloves after

working an animal with known *Staph*. Use postmilking teat dip and discard towels that are used on infected cows. Discard colostrum from *Staph* infected cows so not to infect calves.

Cows are not the only animals that get *Staph aureus*, a recent paper in *Clinical Infections Diseases* shows data out of the University of Iowa, Kent State University

and the National Cancer Institute where 1,242 Iowa residents (urban and swine exposed) were tested and monitored for *Staph*.

26% were found to be carriers, 2.5% tested positive for MRSA, and 9.8% had the livestock-associated *Staph*. Swine exposed individuals were 6x more likely to carry MDRSA (multidrug-resistant *Staph aureus*)

symptoms to their veterinarian or TAHC immediately.

VS cases thus far this year have been found in New Mexico, Arizona and Utah.



## First Case of Vesicular Stomatitis - 2015

TAHC has confirmed VS in three horses at a Pecos County premises located about 30 miles north of Fort Stockton.

Animals were tested after the owner noticed blistering and swelling on the animals' tongues and lips.

VS primarily affects horses and cattle, causing blisters and sores on the tongue, lips, muzzle, nose, hooves and/or teats. Because of the contagious nature and similar appearance to foot and mouth disease (FMD), TAHC urges livestock owners and caretakers to report these

## Bird Flu aftershocks to drive U.S. Poultry, egg prices higher

After the nation's worst-ever outbreak of bird flu, there are limited supplies of baby poultry and barn spaces to house them. This combination is going to hamper U.S. farmers' efforts to rebuild ravaged egg supplies.

As a result of the shortages and

the loss of more than 48 million chickens and turkeys to the bird flu, eggs prices will climb higher than previously expected this year and remain high through 2016.

Producers are calling for a two year time period to fully rebuild and replace flocks.

Farmers are cleaning barns and prepping for new birds, but USDA has yet to give the clearance to allow any chickens in Iowa locations that were affected. But this could take until 2016 due the long cleanup process.

## Salmonella in Texas Feedlots is Being Researched

Efforts are under way by Texas A&M AgriLife Researchers to look at the presence of salmonella in beef cattle feedyards in order to develop new pre-harvest food safety interventions in providing safe,

wholesome food.

Researchers are looking into bacteriophages, which are viruses that act as predators to bacteria, for use as food safety interventions.

This data might help to develop a new pre-harvest food safety intervention that reduces the number of salmonella on cattle hides at harvest by combining salmonella-attacking phages to kill salmonella on the animal.

Farmers with orders on the books for chicks this autumn are "hanging on to those orders in hopes that they can get approval" from the USDA to restock, said Tom Jorgensen, Hy-Line

## TAHC Encourages Equine Owners to Consult Vet Regarding Vaccines

The increased rain seen in Texas this year is expected to increase mosquito activity and TAHC officials are urging equine owners to consult with their veterinarians regarding vaccinating their

horses against mosquito-borne illnesses such as Eastern Equine Encephalitis (EEE), Western Equine Encephalitis (WEE), Venezuelan Equine Encephalitis (VEE) and West Nile Virus (WNV).

About 20-50% horses infected with WEE die, 75-100% horses with EEE will die and VEE has a mortality rate of 40-80%. WNV is also potentially deadly to horses and humans too.

## Chronic Wasting Disease Detected in Medina Co. Captive Deer

Chronic Wasting Disease (CWD) was detected in a 2 yr old white-tailed captive deer in Medina Co. at breeding facility.

**This is the 1<sup>st</sup> case of CWD detected in captive deer in TX.**

An epidemiological investigation is being led to determine the extent of the disease and assess risks to Texas' free ranging and captive deer.

CWD among cervids is a progressive, fatal disease that commonly results in altered behavior as a result of microscopic changes made to the brain of affected animals.

## Special Topics of Interest

### Science Strikes Back Against the self-proclaimed 'Food Babe' and other phonies

The 'Food Babe' is a major thorn in Farmers' and Sciences' side with her false proclamations and lack of formal education or training in food safety or nutrition.

BUT science is fighting back, calling her out and proving her to be full of it and

not qualified. This woman, Vani Hari, has profited on fear-mongering through websites and blog posts.

In addition, Dr. Oz is also feeling heat with 10 doctors calling for his resignation from faculty at Columbia University for

promoting products and claims that are not supported by medical evidence.

My two cents, stand up for what is right, educate the uneducated and do not trust everything you read on Twitter or Facebook!! Science backing is the key.

## Farmers and Ranchers Support Voluntary GMO labeling

Yes, farmers and ranchers are in support of a GMO product labeling law (but not the one you are thinking of) the Pompeo Bill.

This bill would give food sellers the opportunity to voluntarily label

food as GMO-free and gain any market advantage that exists.

If this sounds like it might work, that is because it already has. Organic certification and labeling under USDA has functioned this way for years.

Of course, most of the anti-GMO crowd want to impose strict standards and costs for any product that utilizes biotechnology and that is not about information but misinformation.

## EPA Wants you to Wear Sunscreen

The sun peeking through for short periods of a day can be radiating damage to those outside.

Baseball caps are great to wear but do not protect the ears, face and neck.

Each year in the U.S. nearly 5 million people are treated for skin cancer, with an annual cost of \$8.1 billion. It is diagnosed more than breast, prostate, lung and colon cancer combined.

Apply SPF 30 or higher 15 mins before going out and wear wide-brimmed hats and sunglasses.

Especially Ag retailer employees, crop consultants and farm managers.

Going to need a Vet's note for that

FDA has released the final rule of the Veterinary Feed Directive, effective December 2016 a veterinarian will have to write a prescription for the use of any and all antibiotics.

Antibiotics will no longer be available over-the-counter.

Get ahead of the game and make a list of antibiotics used and expected to be used and then find a veterinary to talk to about the list

## Congo to Increase Insect Farming to Fight Hunger

The Democratic Republic of Congo is looking to tackle hunger to its roughly 65 million people by increasing the acceptance of eating and rearing insects.

"This is the main food of Congolese," says Marie-Colette Bena, "I'm proud to eat that food."

But insect supplies are seasonal and generally more expensive than other types of food, costing twice the price of beef at \$50 /

kilogram.

The Congo's environment ministry and the U.N. Food and Agriculture Organization hope to capitalize on the crunchy fare with a new program that would promote insect cultivation, making insects more widely available and bring down prices.

The project will train 200 people – mostly women – to cultivate caterpillars and crickets.

It is believed that 14,000 tons of insects are consumed each year but there are not farms for raising them so they are collected by hacking down trees or digging deep into the soil.

"For the fight against malnutrition, this is an ideal food," said Paul Monzambe, a professor of agronomy. "The crisis is such that we must think now of all possible approaches."

## Journal Reviews

Behavioural responses of stable flies to cattle manure slurry associated odourants. 2015. Tangtrakulwanich et al. Med Vet Entomol. 29: 82-87.

Field observations have indicated that stable flies increase in abundance when grasslands or crop fields have cattle manure slurry applied.

The researchers determined the major volatile compounds in the manure slurry and tested them against stable flies in an olfactometer assay.

**The Impact.** Knowing these attractive compounds gives ground work for developing an attractant trap to lure stable flies from the field.

Does behavior play a role in house fly resistance to imidacloprid-containing baits?. 2015. Seraydar & Kaufman. Med Vet Entomol. 29: 60-67.

The researchers looked at the behavior and effectiveness of imidacloprid house fly bait, QuickBayt in a laboratory choice test experiment.

The house flies used in the study were from an imidacloprid resistant-strain post 60 generations.

given a choice between bait and sugar.

Evidence showed high mortality to the bait when given alone but less mortality when

**The Impact.** Evidence shows that with insecticide-class rotation, insecticide resistant flies can become susceptible again.

Lethal and sub-lethal effects of faecal deltamethrin residues on dung-feeding insects. 2015. Mann et al. Med Vet Entomol. 29: 189-195.

Dung from deltamethrin pour-on treated cattle and untreated cattle were examined for the presence of dung-feeding insects.

there was decreased survivability of the eggs/larvae.

Results showed that there was no impact on the green bottle fly adults but

When comparing dung beetle numbers, it was obvious that the untreated manure had significantly more dung beetles. But the number of beetles increased the further after treatment.

**The Impact.** What I can say is that if using pyrethroid pour-ons for horn fly control you will probably have decreased dung beetle activity but data did not show an increase in mortality, suggesting repellency.

Repellency of the components of the essential oil, citronella, to *Triatoma rubida*, *Triatoma protracta*, and *Triatoma recurva* (Hemiptera: Reduviidae; Triatominae). 2015. Zamora et al. J Med Entomol. 52: 719-721.

The components of citronella – geraniol, citronellol, limonene, and citronellal – were tested for their repellency effect against commonly collected *Triatoma* bugs in Arizona.

Results showed that geraniol and citronellol were repellent at concentrations of .65 vol% but citronellal and limonene had no repellent activity.

an essential oil (citronella) that works against *Triatoma* bugs but repellency is not entirely understood; results indicate that it is not long-range repellency via vapors.

Lack of evidence for laboratory and natural vertical transmission of bluetongue virus in *Culicoides sonorensis* (Diptera: Ceratopogonidae). 2015. Osborne et al. J Med Entomol. 52: 274-277.

*Culicoides sonorensis* is the principal North American vector of bluetongue virus (BTV).

BTV infections are distinctly seasonal causing some to think there might be vertical transmission between the

midge vector life stages.

The researchers evaluated parent, egg and progeny stages of laboratory reared and infected *C. sonorensis* but virus was never detected in subsequent stages of development.

**The Impact.** Evidence shows that BTV is not transmitted vertically and that persistence of the virus in long-lived female midges is the likely overwintering route of BTV.

Evaluating liquid and granular *Bacillus thuringiensis* var. *israeliensis* broadcast applications for controlling vectors of Dengue and Chikungunya viruses in artificial containers and tree holes. 2015. Harwood et al. J Med Entomol. 52: 663-671.

Vectors of dengue and Chikungunya viruses are mosquitoes that lay their eggs in containers and tree holes but little research has been conducted on the efficient method of applying larvicides to these locations,

specifically tree holes.

The authors compared the application effectiveness of two granular and two liquid Bti products distributed with the Stihl SR 450, backpack sprayer.

**The Impact.** Both product formulations were found to be effective in killing larvae but the key is application method not product. The products were applied with a backpack sprayer while **walking**.

Allethrin-based mosquito control device causing knockdown, morbidity, and mortality in four species of field-caught mosquitoes (Diptera: Culicidae). 2015. Bibbs et al. J Med Entomol. 52: 739-742.

A new mosquito repellency device, called the ThermaCell Mosquito Repellent Appliance was evaluated.

Two devices were set up in a 2337 cubic foot area (15'x15'x10.5') and

four cages of field collected mosquitoes were placed within the area.

The four species exhibited high mortality rates; *A. atlanticus* 98%, *P. ferox* 97%, *P. columbiae* 96% and *A. taeniorhynchus* 84%.

**The Impact.** The device tested is a new handheld appliance that gives repellency for 15'x15' according to the website. I have not personally used but it is listed as an alternative to DEET.

Density-dependent oviposition by female *Aedes albopictus* (Diptera: Culicidae) spreads eggs among containers during the summer but accumulates them in the fall. 2015. Fonseca et al. J Med Entomol. 52: 705-712.

Egg-depositing female *A. albopictus* were given a choice of containers with leaf infusion or plain water, either open or with a cover with small opening and seasonal conditions were mimicked.

It was determined that females preferred open containers with leaf infusion but over time, summer females would expand their choices to all containers. Fall females laying diapausing eggs to hatch in spring, accumulated eggs in open containers

**The Impact.** This information provides some insight into the wide distribution of *A. albo* during the summer but also provides evidence on how to exploit control of the species during fall.

Evaluation of simultaneous transmission of Chikungunya virus and Dengue virus type 2 in infected *Aedes aegypti* and *Aedes albopictus* (Diptera: Culicidae). 2015. Nuckols et al. J Med Entomol. 52: 447-451.

The simultaneous transmission of CHIKV and DENV has been a major public health concern.

Researchers infected groups of *A. aegypti* and *A. albopictus* with CHIKV and DENV-2 separately,

**The Impact.** Both species of mosquitoes were able to be infected with both viruses despite the pattern in which they were infected. And females receiving viruses sequentially could

transmit both viruses at low numbers.

But none of the females were able to transmit both viruses if received simultaneously. Further research is underway to understand why.

Use of ivermectin as endoparasiticide in tropical cattle herds generates resistance in gastrointestinal nematodes and the tick *Rhipicephalus microplus* (Acari: Ixodidae). 2015. Alegria-Lopez et al. J Med Entomol. 52: 214-221.

A small study looked at the impact of using ivermectin in excess ( $\geq 4$  times/yr) and low amounts (1-2) on gastrointestinal nematodes and cattle fever ticks.

All farms surveyed at 100% resistance to GIN. The Excess farms, although not using ivermectin for ticks, had 66.6% resistant compared to 25% on low use farms.

**The Impact.** Although conducted in Mexico, results show resistance to GIN and cattle fever ticks populations even though products were used only for GIN control.

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Evaluation of four bed bug traps for surveillance of the brown dog tick (Acari: Ixodidae). 2015. Carnohan et al. J Med Entomol. 52: 260-268.

The brown dog tick is a huge residential pest that is uniquely able to develop completely indoors. Females can lay up to 4000 eggs and go unnoticed.

Four different bed bug traps were evaluated for brown dog tick surveillance, since no tick traps exist.

**The Impact.** Results showed the traps to be useful in monitoring populations but the CO<sub>2</sub> components are essential.

Detection of permethrin resistance and fipronil tolerance in *Rhipicephalus sanguineus* (Acari: Ixodidae) in the United States. 2015. Eiden et al. J Med Entomol. 52: 429-436.

Permethrin is a commonly used acaricide on domestic animals and environments, while fipronil is restricted to on-animal use.

Ticks were field collected in FL and TX. All populations were permethrin resistant, while four populations were found to be fipronil tolerant.

**The Impact.** This is first published evidence of resistance and tolerance BUT it does not mean all ticks are resistant just in cases where acaricides treatment seems to be ineffective.

Brown dog ticks were evaluated for resistance to permethrin and fipronil after

The geographical distribution and ecological preferences of the American dog tick, *Dermacentor variabilis* (Say), in the USA. 2015. James et al. Med Vet Entomol. 29: 178-188.

*Dermacentor variabilis*, American dog tick, is one of the vectoring ticks of equine piroplasmosis in the US. Outbreaks have occurred in that last few years in FL, MO, KS and TX.

The authors developed a continent-scale map for the distribution of the EP vector using a presence-only modeling approach.

**The Impact.** If you have been impacted by EP or are concerned about it, this map will help you decide if you have cause to be concern because the tick vector is in your area.

Ability of unfed *Dermacentor variabilis* (Acari: Ixodidae) to survive a second winter as adults in Manitoba, Canada, near the northern limit of their range. 2015. Yunik et al. J Med Entomol. 52: 138-142.

One thousand seven hundred unfed field-collected adult *Dermacentor variabilis* ticks were overwintered in 34 outdoor enclosures near the northern limit in Manitoba.

It had been assumed that unfed adult ticks questing in spring succumbed before the next winter.

Results showed that 39.4% were alive in midwinter and 19.9%

survived to April.

**The Impact.** This doesn't directly impact Texans, but it just reminds us of the adaptability of arthropods and how it should never be taken for granted.

Comparison of tick feeding success and vector competence for *Borrelia burgdorferi* among immature *Ixodes scapularis* (Ixodida: Ixodidae) of both southern and northern clades. 2015. Goddard et al. J Med Entomol. 52: 81-85.

Northern and southern *Ixodes scapularis* populations were evaluated for their feeding success and vector competence.

clades feed much faster, finishing in 3 days (73.6%) compared to the southern 1.7% and 6.6%.

Vector competence was not different between the clades.

**The Impact.** There were no transmission differences between the tick clades but certainly there must be ecological or host-preference differences that effect Lyme disease epidemiology.

It was found that the northern Molecular detection of *Rickettsia* species within ticks (Acari: Ixodidae) collected from Arkansas United States. Arkansas has one of the highest reported incidence rates in the US for Rocky Mountain spotted fever.

2015. Fryxell et al. J Med Entomol. 52: 500-508.  
deer were positive. Five tick species were positive; 37% *Amblyomma americanum*, 38% *Ixodes scapularis*, 39% *A. maculatum*, 9% *Rhipicephalus sanguineus*, 4% *Dermacentor variabilis* and 44% unidentified

*Amblyomma*. None of the sequences contained *Rickettsia rickettsii*, causative agent of RMSF.

1,731 ticks and 250 white-tailed deer were screened for rickettsial genes. None of the

**The Impact.** Other rickettsial are the causative agent of diagnosed RMSF in AK and other places (?).